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10/796,048

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Hideki Kamada

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05/26/2010

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EXAMINER

STEELE, JENNIFER A

ART UNIT

PAPER NUMBER

1782

NOTIFICATION DATE

DELIVERY MODE

05/26/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/796,048 | Applicant(s) KAMADA ET AL. | |
| | Examiner JENNIFER STEELE | Art Unit 1782 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,5-7,9-11,13-15,17-19,23,24,27,28,30 and 32-37 is/are pending in the application.
- 4a) Of the above claim(s) 5-7 and 13-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-3,9-11,17-19,23,24,27,28,30,32-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>2/26/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. **Claim 2-3, 9-11, 17-19, 23, 24, 27, 28, 30 and 32-37 rejected under 35 U.S.C. 103(a) as being unpatentable over Toray (JP 49100327A as published in Derwent 1975-34944W) in view of Ueda et al (US 5,208,104) and in further view of Howard (US 5230949).** Independent claims 23 and 24 describe Polyvinyl alcohol fibers having an extremely flattened cross-sectional profile and having a mean thickness D (micron) that satisfies the following formula (1):

$$0.4 < D < 5$$

Wherein

- D = S/L; D indicates the mean thickness (micron) of the fibers which is a mean length (micron) of the minor side of the cross section of the fibers;

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- S indicates the cross-section area (micron^2) of the fibers; and
- L indicates the length (micron) of the major side of the cross section of the fibers;
- Wherein said polyvinyl alcohol fibers consist of polyvinyl alcohol and
- from 0.01 to 30% by mass of a layered compound having a mean particle size of from 0.01 to 30 micron.

Claim 24 describes the fibers as extremely, thinly flattened.

Toray teaches acrylic-vinyl blend as paper substitutes that comprise polyvinyl alcohol, polyacrylonitrile and acrylonitrile vinyl alcohol graft copolymers that are spun through noncircular orifices to form flat fibers. Toray teaches that the flat fibers are spun through orifice sized at 0.04 x 0.5 mm (40-500 micron) to produce flat fibers with a width of 37.5 micron and thickness of 3.4 micron. The fiber thickness is equated with the current application's mean thickness D and is in the range 0.4 and 5 micron as claimed. Toray teaches a flat fiber of the dimensions of the current application and teaches flat fibers that are comprised of polyvinyl alcohol, polyacrylonitrile and acrylonitrile vinyl alcohol graft copolymers.

Toray differs from the current application and does not teach a polymer produced from only PVA polymer. Ueda teaches a PVA fiber produced of a method of spinning a fiber with only PVA resin (col. 6, lines 35-38). Toray teaches a PVA graft copolymer that has the dimensions of a flat fiber as claimed in the current application and Toray presents a finding that it is known in the art to produce a PVA fiber with a flat structure.

Toray differs from the current application and does not teach a filler material.

Ueda teaches that PVA fibers can be produced that consist of only PVA and presents a finding that it is known in the art to produce a fiber that consists only of PVA. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to produce a flat fiber of Toray that consists of only PVA as taught by Ueda motivated to produce a fiber with the desired properties of PVA.

Howard teaches fibers or filaments prepared with a filler material and extruded to form fibers that may be formed into nonwoven webs. The fillers can be minerals such as mica, montmorillonite or siliceous fillers that also include mica's vermiculite (col. 3, lines 4-25). Fillers are used to improve properties of the polymer fiber including mechanical and thermal properties. This invention is motivated to improve wettability or absorption. Howard teaches filler amounts of 10-90% by volume of fibers, but preferably between 40-60% (col. 4, lines 43-51). The average particle size of the filler is preferably 0.01-10 microns.

Toray teaches a flat fiber with the claimed flattened cross-sectional profile, however Toray differs and does not teach the fiber consists of PVA only and Toray does not teach a layered filler compound added to the fiber. Ueda teaches a fiber that consists of PVA. Howard teaches a layered filler compound can be added to fiber melts before extrusion.

As to claims 23 and 24, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add an inorganic filler material to the polyvinyl alcohol fibers motivated to improve the wettability of the PVA fibers.

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As to claims 2 and 27, Toray teaches an **L/D** of 10-50 and teaches an **L/D** of 11 (equal to 37.5/3.4).

As to claims 3 and 28 and 30, Toray teaches branched flattened fibers and teaches the fibers are beaten to fibrillate and produce a pulp having freeness of 305 cm³.

As to claims 9 and 17, Toray teaches beating the fibers to fibrillate into pulp. Toray refers to fibers for manufacturing paper substitutes and is referencing a process for producing wet laid nonwoven. Toray differs and does not teach a dry laid process and Toray does not teach fibrillating the fibers by water jet or needlepunching. The method of preparing the nonwoven and the method of fibrillating the fibers does not distinguish the material of the current application over the prior art of Toray. It should be noted that even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same or an obvious variant from a product of the prior art, the claim is unpatentable even though a different process made the prior product. In re Thorpe, 227 USPQ 964,966 (Fed. Cir. 1985). The burden has been shifted to the Applicant to show unobvious differences between the claimed product and the prior art product. In re Marosi, 218 USPQ 289,292 (Fed. Cir. 1983).

As to Claim 10 and 18, Toray anticipates an **L/D** of 10-50 and teaches an **L/D** of 11 (equal to 37.5/3.4).

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As to Claim 11 and 19, Toray anticipates branched flattened fibers and teaches the fibers are beaten to fibrillate and produce a pulp having freeness of 305 cm³.

As to claims 32 and 34, Toray in view of Ueda differ from the current application and do not teach the properties of water absorbing speed of 123-128 mm/5 min. Toray is directed to a paper that has a strong water extracting ability (page 4, line 15). Toray measures the water extracting strength, or the strength of the sheet when 120% water is absorbed into the sheet. However Toray does not measure the speed that the water is absorbed into the fiber. It would have been obvious to one of ordinary skill in the art to optimize the properties of the PVA fiber motivated to produce a wiping sheet with the desired water absorbing speed.

As to claims 33 and 35, Toray in view of Ueda differ from the current application and do not teach a use of wiping off an acrylic plate spotted with Indian ink wherein the residue after wiping is 3.1 to 5.0%. Statements of use do not distinguish the current invention from prior art. Toray is directed to a paper that has a strong water extracting ability (page 4, line 15). A water extracting paper would be one that has good wiping characteristics.

As to claims 36 and 37, Toray in view of Ueda differ from the current application and do not teach a layered compound that is smectite, montmorillonite or mica. Howard teaches a layered compound is added to improve the wettability of a fibers and filaments. Howard teaches the filler material can be mica or montmorillonite (col. 3, lines 4-10).

It would have been obvious to employ a mica layered material on the fibers motivated to improve the wettability of the fibers and filaments.

Response to Arguments

2. Applicant's arguments, with respect to the 35 USC 102/103 rejection of claims 9-11 and 17-19 have been fully considered and are persuasive. The 35 USC 102/103 rejection of claims 9-11 and 17-19 over Toray has been withdrawn. Applicant indicated that claim 9 is dependent on withdrawn claim 5 which is dependent on claim 23 and that claim 17 is dependent on claim withdrawn claim 13 which is dependent on claim 23.

The dependency of claims 5 and 9 on claim 23 was an oversight and error and as a result Toray did not anticipate claim 23 in the previous Office Action and therefore does not anticipate claims 9-11 and 17-19. The 102/103 rejection over Toray is withdrawn.

As claims 9-11 and 17-19 were also rejected under 35 USC 103 over Toray in view of Ueda and Howard, the claims were previously rejected and this rejection is maintained.

3. Applicant argues "the present inventors also found that the flattened PVA fibers of the present invention can be fibrillated without compromising their physical properties such as chemical resistance, hydrophilicity, weather resistance and tenacity". Applicant has provided evidence in the specification that a copolymer of PVA with polyacrylonitrile has reduced chemical resistance. Applicant has not provided evidence of the other properties. While Toray does not embody a polymer that consists of PVA, Ueda is relied upon for teaching a PVA fiber that consists of PVA with increased tenacity. One of ordinary skill in the art would presume that the properties of PVA alone versus the

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copolymer would be different and inherent to a PVA polymer and simply substituting the PVA of Ueda in the flat fiber of Toray would produce the claimed invention with the desired properties.

4. Applicant argues that the layered compound improves the fibrillation as the fibers are more readily split. It is not clear from the examples in the specification if they contain the layered compound or not. Further, Howard is relied upon for teaching a layered compound when added to the polymer before extrusion improves the wettability of the fibers. The fibrillation process is one where water jets impinge the fibers. If the fiber wettability is improved, a water jet process would more easily penetrate the fiber and fibrillate the fiber and therefore Applicant's result would have been obvious.

5. Applicant argues that the PVA fibers of the invention can be readily split without compromising the physical properties. As noted above, Applicant has provided evidence that the copolymer does not maintain chemical resistance but Applicant has not provided evidence of the other properties. Applicant has not claimed any of these properties as unexpected. Therefore it is reasonable to presume that the simple substitution of PVA of Ueda for the copolymer of Toray would produce a flat, fibrillated fiber of the current invention. Applicant cites the specification page 15, lines 1-11. Applicant is arguing limitations that are not in the claims. Readily fibrillated is not claimed and is a relative term and as Toray's flat fibers are fibrillated it is reasonable to presume that the final fibrillated fiber structure would be the same when a simple substitution of PVA for the copolymer of Toray is made.

Applicant states that when PVA alone is used the fiber will not fibrillate, thus in one embodiment of the present invention, a layered compound is used in order to achieve fibrillation. Applicant has provided no evidence to support this statement. If in fact the simple substitution of PVA of Ueda does not result in a fiber that can be fibrillated, Applicant must present evidence of this as well as amending the claims to be commensurate in scope with the evidence.

6. Applicant argues that Toray discloses the use of polyacrylonitrile which is detrimental to the hydrolysis resistance of the fibers of Toray. Examiner stated in the arguments of Office Action of 5/12/09 as follows that in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., hydrolysis resistance) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

A PVA fiber can be water soluble as disclosed in Ueda, but the reference to Ohgi (US 5,166,263) teaches polyvinyl alcohol fibers that have high strength and high water resistance. The article "Polyvinyl Alcohol Polymer" by Marten published online in the Encyclopedia of Polymer Science and Technology teaches that there is a wide variety of molecular weights and hydrolysis levels in PVA commercially available. The article continues to describe the solubility of poly(vinyl alcohol) is a function of the degree of polymerization and hydrolysis. Fully hydrolyzed PVA is only completely soluble in hot to boiling water, partially hydrolyzed grade are soluble at room temperature. Therefore the

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property of hydrolysis or water resistance is not necessarily inherent to the PVA polymer and is a result of the process of producing the polymer. The claims do not limit the scope of the invention such that the properties taught in the specification would necessarily result from the claimed structure.

Producing PVA fibers is known. Producing flat fibers that are fibrillated that comprise PVA is also known. Using a layered compound to improve wettability is known. One of ordinary skill in the art could have substituted the PVA of Ueda in the flat, fibrillated fiber of Toray and added a layered compound motivated to produce a fiber that can be fibrillated and is useful for synthetic paper with improved absorbing properties. The burden is on Applicant to provide evidence of unexpected results of the combination.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER STEELE whose telephone number is (571)272-7115. The examiner can normally be reached on Office Hours Mon-Fri 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./
Examiner, Art Unit 1782

/Rena L. Dye/
Supervisory Patent Examiner
Art Unit 1782

5/19/2010